

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sada (US Patent 5,885,690).

Sada discloses rolling sliding parts of a surface which contacts another member comprising a(n):

Re claims 1-3

- Outermost surface position is defined as a highest portion out of fine roughnesses existing on the surface (col. 3 ll. 33-35; Fig. 1A)

Regarding claim 1, although Sada discloses the roughness profile R having a maximum height R_y being from 1 to 3 micrometers (col. 3 ll. 32-34) and that "the ratio of the open area of the very small recesses to the whole area of the rolling contact surface 11a, that is, the area ratio is set to 5 to 20% and more particularly, 5 to 10%" (col. 3 ll. 38-41), Sada does not expressly disclose an occupation ratio being set from 90% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 2.0 micrometers from the outermost surface position by an area of an overall surface of a portion that contacts the other member.

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide an occupation ratio being set from 90% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 2.0 micrometers from the outermost surface position by an area of an overall surface of a portion that contacts the other member, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05.

Regarding claim 2, although Sada discloses the roughness profile R having a maximum height R_y being from 1 to 3 micrometers (col. 3 ll. 32-34) and that “the ratio of the open area of the very small recesses to the whole area of the rolling contact surface 11a, that is, the area ratio is set to 5 to 20% and more particularly, 5 to 10%” (col. 3 ll. 38-41), Sada does not expressly disclose an occupation ratio being set from 80% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.5 micrometers from the outermost surface position by an area of an overall surface of a portion that contacts the other member.

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide an occupation ratio being set from 80% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.5 micrometers from the outermost surface

position by an area of an overall surface of a portion that contacts the other member, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05.

Regarding claim 3, although Sada discloses the roughness profile R having a maximum height R_y being from 1 to 3 micrometers (col. 3 ll. 32-34) and that "the ratio of the open area of the very small recesses to the whole area of the rolling contact surface 11a, that is, the area ratio is set to 5 to 20% and more particularly, 5 to 10%" (col. 3 ll. 38-41), Sada does not expressly disclose an occupation ratio being set from 50% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.0 micrometers from the outermost surface position by an area of an overall surface of a portion that contacts the other member.

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide an occupation ratio being set from 50% or more to less than 100%, the occupation ratio being calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.0 micrometers from the outermost surface position by an area of an overall surface of a portion that contacts the other member, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or

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workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05.

Sada as modified above further discloses the following:

Re claim 4

- Occupation ratio of a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.5 micrometers from the outermost surface position, to the area of the surface that contacts the other member is set to 80 % or more (see above regarding optimization of ranges; MPEP 2144.05)

Re claim 5

- Occupation ratio of a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.0 micrometers from the outermost surface position, to the area of the surface that contacts the other member is set to 50 % or more (see above regarding optimization of ranges; MPEP 2144.05)

Re claim 6

- Occupation ratio of a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.5 micrometers from the outermost surface position, to the area of the surface that contacts the other member is set to 80 % or more (see above regarding optimization of ranges; MPEP 2144.05),
- Occupation ratio of a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 1.0 micrometers from the outermost surface position, to the area of the surface of a portion that contacts the other member is set to 50% or more (see above regarding optimization of ranges; MPEP 2144.05)

Re claims 7-12

- The rolling sliding part is a roller constituting a cam follower unit (Fig. 3) in which an outer peripheral surface of a roller (11a) supported rotatably around a roller supporting shaft (12) is brought into contact with an outer peripheral surface of a cam (at 7) via a rolling contact.

Re claim 13-18

- The rolling sliding part is a rocker arm (at 3; col. 5 ll. 52-59) into a part of which a cam follower unit is incorporated.

Re claims 19-24

- The rolling sliding part is an inner ring (near 13; col. 5 ll. 43-51) having a cylindrical inner ring raceway on an outer peripheral surface or a shaft (12).

Re claim 25-30

- The rolling sliding part is a needle (13; col. 5 ll. 43-51) that is provided rollably between a cylindrical inner ring raceway and a cylindrical outer ring raceway (Fig. 2)

Response to Arguments

Applicant's arguments filed 11/15/2011 have been fully considered but they are not persuasive.

Applicant argues that Sada is silent regarding the surface having an occupation ratio at a certain depth and thus the "area ratio" in Sada cannot be equated with the claimed occupation ratio. In response, column 2, lines 39-41 recites "In a preferred mode of the present invention, the ratio of the open area of the very small recesses to the *whole area* of the contact surface is 5 to 20%" (emphasis added). This passage aims to essentially characterize the size of the recesses

as compared to the outermost surface of the contact surface. In other words, the ratio of open area of the recesses to the whole area of the contact surface being 5 to 20% equates to a ratio of the outermost surface area to the whole area being within the range of 80 to 95%. An interpretation of this data compatible with the terms set forth in the claims would be an occupation ratio set from 80 to 95% calculated by dividing a sectional area of a virtual plane in a plane direction at a portion that is positioned at a depth of 0 μm from the outermost surface position by an area of an overall surface. Column 6, lines 51-55 further provides further support for this interpretation as it describes the measurement taken via "an image obtained by microscopic observation" to find "the area occupied by openings of the very small recesses to the area of the rolling contact surface." As such, Sada indeed implicitly considers the "depth" parameter set forth in the claims.

Applicant argues that the grounds of rejection lack any reason with some rational underpinning. In response, as conveyed by the foregoing, Sada indeed teaches the general conditions of the claims specifically supporting an occupation ratio taken at a certain depth. The basis of obviousness set forth by the grounds of rejection is that the mere optimization of these general conditions results in changes in degree rather than changes in kind and therefore does not necessarily constitute invention. In this case, the changes set forth in the claims essentially characterize a mere change in size/area of the recesses provided in Sada and would not produce results beyond the expectation of one of ordinary skill in the art. Applicant argues that In re Aller does not support this position of obviousness because it only speaks for optimum or workable ranges obtained by routine experimentation. In response, Table 1, for example, in

column 6 of Sada indeed reflects a vehicle for the routine experimentation sufficient for optimization.

Applicant argues that In re Aller is inapplicable and because the subject matter is irrelevant as it addressed changes in temperature or concentration of a chemical process. In response, In re Aller is pertinent because of what it implies in terms of optimization. The Board of Appeals in this case expresses the following opinion:

Normally, it is to be expected that a change in temperature, or in concentration, or in both, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce **a new and unexpected result which is different in kind and not merely in degree from the results of the prior art.** In re Dreyfus, 22 C.C.P.A. (Patents) 830, 73 F.2d 931, 24 USPQ 52 ; In re Waite et al., 35 C.C.P.A. (Patents) 1117, 168 F.2d 104, 77 USPQ 586. (Emphasis added)

The precedence of In re Aller is relevant in the instant case in that it provides guidance for determining whether or not the claimed ranges impart patentability. The claimed ranges do not produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art and as such do not impart patentability.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL YABUT whose telephone number is (571)270-5526. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard W. Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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